

$\omega(1420)$ $I^G(J^{PC}) = 0^-(1^- -)$ **$\omega(1420)$ MASS**

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
(1400–1450) OUR ESTIMATE				

• • • We do not use the following data for averages, fits, limits, etc. • • •

1382 ± 23 ± 70	AUBERT	07AU BABR	10.6 $e^+ e^- \rightarrow \omega \pi^+ \pi^- \gamma$
1350 ± 20 ± 20	AUBERT,B	04N BABR	10.6 $e^+ e^- \rightarrow \pi^+ \pi^- \pi^0 \gamma$
1400 ± 50 ± 130	1.2M	1 ACHASOV	03D RVUE $0.44\text{--}2.00 e^+ e^- \rightarrow \pi^+ \pi^- \pi^0$
1450 ± 10	2 HENNER	02 RVUE	1.2–2.0 $e^+ e^- \rightarrow \rho \pi, \omega \pi \pi$
1373 ± 70	177	3 AKHMETSHIN 00D	CMD2 1.2–1.38 $e^+ e^- \rightarrow \omega \pi^+ \pi^-$
1370 ± 25	5095	ANISOVICH	00H SPEC 0.0 $p\bar{p} \rightarrow \omega \pi^0 \pi^0 \pi^0$
1400 ⁺¹⁰⁰ ₋₂₀₀	4 ACHASOV	98H RVUE	$e^+ e^- \rightarrow \pi^+ \pi^- \pi^0$
~ 1400	5 ACHASOV	98H RVUE	$e^+ e^- \rightarrow \omega \pi^+ \pi^-$
~ 1460	6 ACHASOV	98H RVUE	$e^+ e^- \rightarrow K^+ K^-$
1440 ± 70	7 CLEGG	94 RVUE	
1419 ± 31	315	8 ANTONELLI	92 DM2 1.34–2.4 $e^+ e^- \rightarrow \rho \pi$

¹ From the combined fit of ANTONELLI 92, ACHASOV 01E, ACHASOV 02E, and ACHASOV 03D data on the $\pi^+ \pi^- \pi^0$ and ANTONELLI 92 on the $\omega \pi^+ \pi^-$ final states. Supersedes ACHASOV 99E and ACHASOV 02E.

² Using results of CORDIER 81 and preliminary data of DOLINSKY 91 and ANTONELLI 92.

³ Using the data of AKHMETSHIN 00D and ANTONELLI 92. The $\rho \pi$ dominance for the energy dependence of the $\omega(1420)$ and $\omega(1650)$ width assumed.

⁴ Using data from BARKOV 87, DOLINSKY 91, and ANTONELLI 92.

⁵ Using the data from ANTONELLI 92.

⁶ Using the data from IVANOV 81 and BISELLO 88B.

⁷ From a fit to two Breit-Wigner functions and using the data of DOLINSKY 91 and ANTONELLI 92.

⁸ From a fit to two Breit-Wigner functions interfering between them and with the ω, ϕ tails with fixed (+, -, +) phases.

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VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
(180–250) OUR ESTIMATE				

• • • We do not use the following data for averages, fits, limits, etc. • • •

130 ± 50 ± 100	AUBERT	07AU BABR	10.6 $e^+ e^- \rightarrow \omega \pi^+ \pi^- \gamma$
450 ± 70 ± 70	AUBERT,B	04N BABR	10.6 $e^+ e^- \rightarrow \pi^+ \pi^- \pi^0 \gamma$
870 ⁺⁵⁰⁰ ₋₃₀₀ ± 450	1.2M	9 ACHASOV	03D RVUE $0.44\text{--}2.00 e^+ e^- \rightarrow \pi^+ \pi^- \pi^0$
199 ± 15	10 HENNER	02 RVUE	1.2–2.0 $e^+ e^- \rightarrow \rho \pi, \omega \pi \pi$
188 ± 45	177	11 AKHMETSHIN 00D	CMD2 1.2–1.38 $e^+ e^- \rightarrow \omega \pi^+ \pi^-$
360 ⁺¹⁰⁰ ₋₆₀	5095	ANISOVICH	00H SPEC 0.0 $p\bar{p} \rightarrow \omega \pi^0 \pi^0 \pi^0$
240 ± 70	12 CLEGG	94 RVUE	
174 ± 59	315	13 ANTONELLI	92 DM2 1.34–2.4 $e^+ e^- \rightarrow \rho \pi$

⁹ From the combined fit of ANTONELLI 92, ACHASOV 01E, ACHASOV 02E, and ACHASOV 03D data on the $\pi^+ \pi^- \pi^0$ and ANTONELLI 92 on the $\omega \pi^+ \pi^-$ final states. Supersedes ACHASOV 99E and ACHASOV 02E.

¹⁰ Using results of CORDIER 81 and preliminary data of DOLINSKY 91 and ANTONELLI 92.

¹¹ Using the data of AKHMETSHIN 00D and ANTONELLI 92. The $\rho \pi$ dominance for the energy dependence of the $\omega(1420)$ and $\omega(1650)$ width assumed.

¹² From a fit to two Breit-Wigner functions and using the data of DOLINSKY 91 and ANTONELLI 92.

¹³ From a fit to two Breit-Wigner functions interfering between them and with the ω, ϕ tails with fixed (+, -, +) phases.

$\omega(1420)$ DECAY MODES

Mode	Fraction (Γ_i/Γ)
$\Gamma_1 \rho\pi$	dominant
$\Gamma_2 \omega\pi\pi$	seen
$\Gamma_3 b_1(1235)\pi$	seen
$\Gamma_4 e^+e^-$	seen
$\Gamma_5 \pi^0\gamma$	

 $\omega(1420) \Gamma(i)\Gamma(e^+e^-)/\Gamma^2(\text{total})$

$\Gamma(\rho\pi)/\Gamma_{\text{total}} \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$	$\Gamma_1/\Gamma \times \Gamma_4/\Gamma$
<u>VALUE (units 10^{-6})</u>	<u>EVTS</u> <u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>

• • • We do not use the following data for averages, fits, limits, etc. • • •

0.82 ± 0.05 ± 0.06	AUBERT,B	04N BABR	$10.6 e^+e^- \rightarrow \pi^+\pi^-\pi^0\gamma$
0.65 ± 0.13 ± 0.21	1.2M 14,15 ACHASOV	03D RVUE	$0.44-2.00 e^+e^- \rightarrow \pi^+\pi^-\pi^0$
0.625 ± 0.160	16,17 CLEGG	94 RVUE	
0.466 ± 0.178	18,19 ANTONELLI	92 DM2	$1.34-2.4 e^+e^- \rightarrow \rho\pi$

14 Calculated by us from the cross section at the peak.

15 From the combined fit of ANTONELLI 92, ACHASOV 01E, ACHASOV 02E, and ACHASOV 03D data on the $\pi^+\pi^-\pi^0$ and ANTONELLI 92 on the $\omega\pi^+\pi^-$ final states. Supersedes ACHASOV 99E and ACHASOV 02E.

16 From a fit to two Breit-Wigner functions and using the data of DOLINSKY 91 and ANTONELLI 92.

17 From the partial and leptonic width given by the authors.

18 From a fit to two Breit-Wigner functions interfering between them and with the ω,ϕ tails with fixed (+,-,+/-) phases.

19 From the product of the leptonic width and partial branching ratio given by the authors.

$\Gamma(\omega\pi\pi)/\Gamma_{\text{total}} \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$	$\Gamma_2/\Gamma \times \Gamma_4/\Gamma$
<u>VALUE (units 10^{-8})</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>

• • • We do not use the following data for averages, fits, limits, etc. • • •

19.7 ± 5.7	AUBERT	07AU BABR	$10.6 e^+e^- \rightarrow \omega\pi^+\pi^-\gamma$
1.9 ± 1.9	20 AKHMETSHIN	00D CMD2	$1.2-2.4 e^+e^- \rightarrow \omega\pi^+\pi^-$

20 Using the data of AKHMETSHIN 00D and ANTONELLI 92. The $\rho\pi$ dominance for the energy dependence of the $\omega(1420)$ and $\omega(1650)$ width assumed.

$\Gamma(\pi^0\gamma)/\Gamma_{\text{total}} \times \Gamma(e^+e^-)/\Gamma_{\text{total}}$	$\Gamma_5/\Gamma \times \Gamma_4/\Gamma$
<u>VALUE (units 10^{-8})</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>

• • • We do not use the following data for averages, fits, limits, etc. • • •

2.03 $^{+0.70}_{-0.75}$	21 AKHMETSHIN	05 CMD2	$0.60-1.38 e^+e^- \rightarrow \pi^0\gamma$
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21 Using 1420 MeV and 220 MeV for the $\omega(1420)$ mass and width.

 $\omega(1420)$ BRANCHING RATIOS

$\Gamma(\omega\pi\pi)/\Gamma_{\text{total}}$	Γ_2/Γ
<u>VALUE</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>

• • • We do not use the following data for averages, fits, limits, etc. • • •

0.301 ± 0.029 possibly seen	22 HENNER	02 RVUE	$1.2-2.0 e^+e^- \rightarrow \rho\pi, \omega\pi\pi$
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$\Gamma(\omega\pi\pi)/\Gamma(b_1(1235)\pi)$	Γ_2/Γ_3
<u>VALUE</u>	<u>EVTS</u> <u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>

• • • We do not use the following data for averages, fits, limits, etc. • • •

0.60 ± 0.16	5095	ANISOVICH	00H SPEC	$0.0 p\bar{p} \rightarrow \omega\pi^0\pi^0\pi^0$
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$\Gamma(\rho\pi)/\Gamma_{\text{total}}$	Γ_1/Γ
<u>VALUE</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>

• • • We do not use the following data for averages, fits, limits, etc. • • •

0.699 ± 0.029	22 HENNER	02 RVUE	$1.2-2.0 e^+e^- \rightarrow \rho\pi, \omega\pi\pi$
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$\Gamma(e^+e^-)/\Gamma_{\text{total}}$				Γ_4/Γ
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• • • We do not use the following data for averages, fits, limits, etc. • • •				
~ 6.6	1.2M	23,24	ACHASOV 03D RVUE	$0.44-2.00 e^+ e^- \rightarrow \pi^+\pi^-\pi_0^0$
23 ± 1	22	HENNER 02	RVUE	$1.2-2.0 e^+ e^- \rightarrow \rho\pi, \omega\pi\pi$

22 Assuming that the $\omega(1420)$ decays into $\rho\pi$ and $\omega\pi\pi$ only.
 23 Calculated by us from the cross section at the peak.
 24 Assuming that the $\omega(1420)$ decays into $\rho\pi$ only.

$\omega(1420)$ REFERENCES

AUBERT 07AU	PR D76 092005	B. Aubert <i>et al.</i>	(BABAR Collab.)	REFID=52049
AKHMETSHIN 05	PL B605 26	R.R. Akhmetshin <i>et al.</i>	(Novosibirsk CMD-2 Collab.)	REFID=50330
AUBERT,B 04N	PR D70 072004	B. Aubert <i>et al.</i>	(BABAR Collab.)	REFID=50184
ACHASOV 03D	PR D68 052006	M.N. Achasov <i>et al.</i>	(Novosibirsk SND Collab.)	REFID=49577
ACHASOV 02E	PR D66 032001	M.N. Achasov <i>et al.</i>	(Novosibirsk SND Collab.)	REFID=48815
HENNER 02	EPJ C26 3	V.K. Henner <i>et al.</i>		REFID=49177
ACHASOV 01E	PR D63 072002	M.N. Achasov <i>et al.</i>	(Novosibirsk SND Collab.)	REFID=48311
AKHMETSHIN 00D	PL B489 125	R.R. Akhmetshin <i>et al.</i>	(Novosibirsk CMD-2 Collab.)	REFID=47935
ANISOVICH 00H	PL B485 341	A.V. Anisovich <i>et al.</i>		REFID=47948
ACHASOV 99E	PL B462 365	M.N. Achasov <i>et al.</i>	(Novosibirsk SND Collab.)	REFID=47391
ACHASOV 98H	PR D57 4334	N.N. Achasov, A.A. Kozhevnikov		REFID=46323
CLEGG 94	ZPHY C62 455	A.B. Clegg, A. Donnachie	(LANC, MCHS)	REFID=44081
ANTONELLI 92	ZPHY C56 15	A. Antonelli <i>et al.</i>	(DM2 Collab.)	REFID=43168
DOLINSKY 91	PRPL 202 99	S.I. Dolinsky <i>et al.</i>	(NOVO)	REFID=41369
BISELLA 88B	ZPHY C39 13	D. Bisello <i>et al.</i>	(PADO, CLER, FRAS+)	REFID=40581
BARKOV 87	JETPL 46 164	L.M. Barkov <i>et al.</i>	(NOVO)	REFID=40280
	Translated from ZETFP 46 132.			
CORDIER 81	PL 106B 155	A. Cordier <i>et al.</i>	(ORsay)	REFID=21586
IVANOV 81	PL 107B 297	P.M. Ivanov <i>et al.</i>	(NOVO)	REFID=20553

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